

Joint Effort to Promote Digital Literacy from School

Upaya Bersama Meningkatkan Literasi Digital dari Sekolah

Yulia Indahri

yulia.indahri@dpr.go.id

Pusat Penelitian, Badan Keahlian DPR RI

Jl. Gatot Subroto, Jakarta, Indonesia

Received: September 30, 2022 | Revised: December 25, 2022 | Published: December 31, 2022

Abstrak: *Pandemi yang terjadi di era digital mendorong percepatan implementasi budaya digital. Ruang digital juga menjadi tempat menyampaikan pendapat secara bebas. Namun, kebebasan berpendapat juga memiliki batasan. Pada praktiknya masih banyak pengguna teknologi yang tidak memiliki kemampuan memanfaatkan teknologi digital dengan baik. Tidak ada pemahaman dalam pemanfaatannya. Pemerintah Indonesia telah berusaha menyusun program yang dapat diikuti semua lapisan masyarakat dari atas ke bawah, muda hingga dewasa, agar masyarakat melek digital. Memang telah ada upaya untuk meningkatkan literasi digital di masyarakat, tetapi upaya tersebut cenderung bersifat sukarela, insidental, dan sporadis. Padahal, ada satu hal yang bisa dimaksimalkan, yaitu pendidikan digital oleh guru di sekolah dan orangtua di rumah. Dua hal yang belum sepenuhnya dipertimbangkan secara matang dalam berbagai gerakan yang digagas pemerintah saat ini. Tulisan ini akan membahas peluang melibatkan peran keluarga untuk mengajarkan anak sejak dini dalam berinteraksi dan bersosialisasi di era digital. Dokumen serta laporan pemerintah dan masyarakat dari dalam dan luar negeri digunakan untuk memperkuat bahasan. Analisis dilakukan berdasarkan data sekunder yang didapat dari dokumen dan laporan tersebut dan disusun berdasarkan alur pentingnya pengenalan literasi digital. Pengenalan dari rumah akan lebih mudah karena saat ini sudah ada upaya mengenalkan literasi digital di sekolah. Selain itu, orangtua juga makin melek digital. Untuk rencana jangka panjang, literasi digital perlu mengintegrasikan berbagai program pemerintah yang telah dilakukan lintas kementerian dan telah melibatkan guru, sekolah, dan juga masyarakat.*

Kata Kunci: *kerangka literasi digital; literasi digital; pendidikan digital*

Abstract: The recent pandemic makes the digital era seem to have accelerated the implementation of digital culture. The digital space also gives freedom of expression. However, freedom of expression also has limitations. There are excessive efforts to utilize digital technology without a better understanding of its use. The government of Indonesia has tried to touch all levels of society from top to bottom, young to adult, so they are digitally literate. There are activities to improve digital literacy in communities, but it tends to be voluntary, incidental, and sporadic. There is a point that can be maximized, digital education by teachers at school and parents at home. Two things that are not fully covered by the current movement initiated by the government. This



study will discuss opportunities to involve families in teaching their children from an early age to be ready for the digital era. Documents and reports from local and global entities, as well as from the public, are used to support the main idea of the discussion. The analysis was carried out based on secondary data obtained from those documents and reports and presented based on the importance of introducing digital literacy. Introduction from home will be easier because there are efforts to introduce digital literacy in schools. In addition, parents are also more digitally literate. For a long-term plan, digital literacy needs to integrate various government programs carried out across ministries and involve teachers, schools, and the community.

Keywords: digital literacy; digital education; digital literacy framework

Introduction

Indonesia is the largest digital economy market in Southeast Asia, with an estimated value of US 70 billion in 2020, and it will grow nearly five times to US 330 billion by 2030 (Google et al., 2021). In June 2020—four months after the outbreak of the pandemic—a survey by the Indonesian Internet Service Providers Association (*Asosiasi Penyelenggara Jasa Internet Indonesia-APJII*) said that nearly three-quarters (73.70 percent) of the population accessed the Internet. It was an increase of 8.9 percent compared to the previous year (Asosiasi Penyelenggara Jasa Internet Indonesia, 2020).

After the two-year pandemic, based on the latest survey by the same association from January–February 2022, internet users increased by 3.32 percent. According to the latest survey, the intensity, frequency, and timing of internet use increased among adolescents and young adults in all economic groups. Uniquely, the number of homemakers using the Internet has dramatically increased from 48.2 percent in 2019 to 84.61 percent in 2022 (Asosiasi Penyelenggara Jasa Internet Indonesia, 2022). However, both growths were slow compared to the increase between 2018 and 2019, reaching 10.12 percent.

Like many other countries, Indonesia is plagued by fake news and disinformation. Based on the 18 April 2020 hoax report from the Ministry of Communication and Informatics (MCI), during the Covid-19 pandemic, a swift flow of disinformation was circulating. The MCI has found 554 hoax rumors spread across various digital platforms (Rizki-naswara, 2020). The latest data from the MCI show that as of 16 August 2022, there were 143,068 hoax rumors for the year 2022 (TRUST Positif, n.d.).

Based on the 2021 National Digital Literacy Survey conducted by the MCI and Katadata Insight, Indonesian have high trust in the government as the number one actor responsible for stopping the spread of hoaxes (63 percent) and controlling disinformation instead of emphasizing the role of individuals or educational institutions (Dihni, 2022). This figure is higher than the 2020 survey, which showed that 54.8 percent of respondents believed that the MCI played a central role.

For the past five years, the International Institute for Management Development has assessed the capacity and readiness of world economies to adopt and explore digital technologies. The list reported on the World Digital Competitiveness Ranking measures the key driver for economic transformation in business, government, and wider society. In 2022, Indonesia ranked 51st out of 63 countries, from 53rd out of 64 countries in 2021 (International Institute for Management and Development, 2022, p. 92).

This problem can be worsened by low digital literacy. This study will discuss opportunities to involve families in teaching their children from an early age to be ready for the digital era. The available opportunities start from what public school has already initiated as part of the National Literacy Movement of 2016. Digital literacy is an important skill for children to develop in order to succeed in today's digital world.

There are many ways that families can support their children's digital literacy development at home. Children often learn by imitating their parents' and other adults' behaviors. Involving families in the teaching and learning process can effectively support children's digital literacy development. By providing access to educational resources, setting limits and boundaries, and getting involved in the learning process, parents can help their children develop the skills they need to succeed in the digital world.

This study uses a literature review on digital literacy in families and schools focused on Indonesia. By carefully selecting and reviewing the literature on digital literacy in families and schools, this study tries to provide a valuable contribution to the field and help to inform future research and practice in this area. The document and article selection process was carried out by taking into account the suitability of the theme of digital literacy in families and schools with the year of article publication for the last six years, namely 2016–2022.

Around 40 publications were selected for the keywords “digital literacy”, “digital literacy education in schools”, “digital literacy education in the family”, and “digital literacy in Indonesia”. Out of a total of studied publications, there are two publications that refer to journal articles published in 2004 and reports in 2007. These two publications are deemed necessary to see more about the background to the emergence of discussions on digital literacy in families.

A *roadmap* of digital literacy, digital literacy for students and education personnel, as well as reports from MCI and MoE on the digital literacy movement are the main references. Reports and publications from UN-affiliated organizations –such as UNESCO, UNICEF, UNDP, and WHO– as well as public and private sectors in Indonesia, such as APJII and Digital Literacy Activist Network (Jaringan Pegiat Literasi Digital–Japelidi), are used to support the main idea of the discussion.

The analysis was carried out by considering and exploring the above-mentioned documents, articles, reports, and publications. Throughout the reading of those, previous studies were mapped out. The map is useful to assess areas of discussion and to justify this study's aim to seek the importance of introducing and promoting digital literacy at home within the family as a joint effort initiated by schools.

Based on literature studies, there have been numerous studies on the involvement of parents in digital literacy in several countries. Dias et al. (2016, p. 414) investigate the role played by parents as mediators of young children's (between 6 to 7 years old) access and engagement with digital technologies in Belgium, Germany, Latvia, and Portugal. Burris (2019, p. 302) studied parental involvement in early childhood programs for six weeks to six years old children in out-of-home care facilities in the USA. The two studies heavily look into family involvement.

In their conclusion, both studies noted that parents' views on the usefulness of digital technologies impact the technology available at home. Digital technology is a tool for responsible entertainment and education. Although there are still technical challenges, these attitudes, in turn, affect how parents mediate their children's real use of digital technology.

A study in Xiamen, China, focuses on a secondary school with digitized classes (He & Wray, 2017, p. 233) to answer the challenge of focused studies on Western countries only. While in Arab, Alaleeli and Alnajjar (2020, p. 159) investigated the amount of technology used outside of the classroom among senior high school students who exhibited the traits of the Arab Digital Generation. However, different conditions apply in Africa. Unlike most privileged countries, Africa has limited access to technology. The lack of adequate infrastructure is a major reason African student fall behind in digital literacy (Ayari, 2022). The

three studies were mainly on school involvement supported by the government on digital literacy. The national government has already started the program on digital literacy, and the public, especially the family, should continue the effort.

Before the pandemic, Indonesian studies on digital literacy mainly evaluated digital literacy for students at schools. Studies by Adityar (2017) and Desi (2019) on digital literacy at schools pointed out the need for a structured curriculum for digital literacy when most students are digitally literate. With the increased use of technology during Covid-19, some studies on digital literacy at home were conducted to view its relation to digital literacy from home. Sukri (2021) and Sukron (2021) try to understand the increasing use of technology and the role of parents in their children's learning activities. Recommendations from the last two were to hold training for teachers as actors/facilitators of digital literacy as well as the active participation of parents in developing a digital literacy culture at home. The pandemic has introduced home and family as actors in digital literacy. The inclusion of parents as the main actors in digital literacy has not been discussed thoroughly in those studies.

Digital Literacy and Digitally Literate

Digital literacy is rich in definitions and classifications, but there is still no consensus on the larger and subsumed themes categories (Tinmaz et al., 2022, p. 1). The current literature defines digital literacy as the abilities and skills necessary for navigating a fragmented and complicated information ecosystem (Eshet, 2004, p. 93). This definition of digital literacy is almost always associated with a set of various technical and non-technical elements.

As an ecosystem, Eshet-Alkalai (2012, pp. 268–271) created a “Digital Literacy Framework” with six categories of the following: (1) photo-visual skills (understanding and using visual information); (2) reproduction skills (creating outcomes using technological tools by designing new content or remixing existing digital content); (3) branching skills (navigating in non-linear hypermedia environments); (4) information skills (evaluating and combining information from multiple digital sources); (5) socio-emotional skills (understanding and applying cyberspace rules); and (6) real-time skills (simultaneously processing a variety of stimuli).

Loewus et al. (2016) came up with a simpler definition of the ecosystem of digital literacy within three groups of the following clusters: (1) finding and consuming digital content; (2) creating digital content; and (3) communicating or sharing digital content. Further, the Ministry of Education (MoE) (2017, p. 8) defines digital literacy as knowledge and skills to use digital media, communication tools, or networks in finding, evaluating, using, and creating information.

MoE defines that being digitally literate means processing various information, understanding messages, and communicating effectively with others in various ways (Kementrian Pendidikan dan Kebudayaan, 2017, p. 4). In this case, the various ways of creating, collaborating, communicating, and working in compliance with ethical rules and understanding when to use and how to use technology effectively to achieve goals. Digital technology users should be aware and exercise critical thinking on various positive and negative impacts that may occur in daily life.

As there is no consensus on the digital literacy definition, in a systemic review of forty-three articles on digital literacy, Tinmaz et al. (2022) came up with four major digital literacy themes: literacy, competencies, skills, and thinking. Digital literacy is an umbrella term for many different technologies and affects different areas of human lives, from education,

business, health, governance, et cetera. Different case studies could be carried out for each of these unique dimensions of our lives.

Digital literacy is also evolving from an operational focus—that is, on digital technical skills—towards more holistic approaches that also consider digital literacy’s cultural and critical thinking aspects. Regarding policies and initiatives, digital literacy is high on the agenda of major international organizations such as UNESCO, the European Commission, and the International Telecommunication Union. They are mainly targeting general citizens and not children.

Commercial actors, such as the International Computer Drivers License (ICDL), Microsoft, Intel, and Google, actively promote digital literacy programs based on their specific approaches. In general terms, across the main national and international contexts, there is a broad convergence in digital literacy that builds on approaches put forward by both public and private actors. However, low digital literacy from any case studies should be considered a warning sign. Furthermore, under these circumstances, Indonesia threatens to become a mere market and misses the opportunity to profit from this technology.

Digital Literacy Frameworks, Programs, and Mapping

Competence frameworks on digital literacy are conceptualizations aimed at structuring a set of intertwined competencies. They aim to enhance the capacities of a specific target group, from libraries, education, and ICT to industry or subject-to-discipline orientation. They can be adopted from national, regional, and international frameworks. In addition, they can be found within policy documents, school curricula, certification schemes, and academic papers. These frameworks are abundant in the digital sphere, as shown by the All Aboard research that has identified more than one hundred models to map the digital competencies needed in a modern economy and society (White & Lanclos, 2015).

Out of one hundred models, several digital literacy competence frameworks have been developed by international organizations, such as the UNESCO Global Framework of Reference on Digital Literacy Skills, the European Commission DigComp framework, the UNESCO Media and Information Literacy (MIL) framework, the Digital Citizenship Education framework by the CoE, and the OECD Skills Research framework or the Digital Intelligence (DQ) framework. Others were designed to be used at national or subnational levels, such as the UK Jisc Digital Capability Model, the Learning Wales program, or the British Columbia Digital Literacy Curriculum. Others, such as the International Computer Driving Licence (ICDL) or the Microsoft Digital Literacy Standard Curriculum, are maintained by commercial private sector actors. Finally, some NGOs and foundations have developed widely known digital literacy competence frameworks, such as the Common Sense Education K-12 Digital Citizenship Curriculum or the Mozilla Web Literacy Framework (Nascimbeni & Vosloo, 2019, p. 18).

In Indonesia, the first digital literacy framework under the general literacy movement was part of the National Literacy Movement (NLM) of the MoE, launched in 2016. This movement was motivated by a few reasons. First, the unsatisfactory results of the human development index (HDI) before the introduction of the NLM in 2016. The HDI values from 2011 to 2015 were 0.673 and 0.695. Moreover, the value increased from 0.690 in 2014 to 0.718 in 2019 (United Nations Development Programme, 2020).

Second, a survey on literacy conducted by Central Connecticut State University in 2016 puts Indonesia in 60th place out of 61 countries (CCSU News Release, 2016). Third, the 2015 PISA survey results with Indonesia as 64th rank out of 72 countries and 71st out of 77 countries in 2018 (Avvisati et al., 2019). Lastly, the Indonesian elementary student’s assessment conclusions that the student’s ability is very weak.

Therefore, more serious efforts are needed to improve general literacy. The NLM is carried out continuously, integrated, collectively, and comprehensively (Kementerian Pendidikan dan Kebudayaan, 2017, pp. 1–5). NLM focuses on six basic literacy aspects: reading-writing, numeracy, science, finance, digital, and culture-citizenship. The implementation takes place simultaneously in three educational domains (school, family, and community) through programs known as the School Literacy Movement, Family Literacy Movement, and Community Literacy Movement. However, one most sought-after of the three movements is within the school environment.

Faced with threats of Indonesia becoming a mere market and not a player in the advancement of technology, the MCI has launched the National Digital Literacy Movement (NDLM) Siberkreasi. The noble aim of the movement framework is to encourage people to participate in the dissemination of positive online content actively and become more productive in the digital world. The launch of Siberkreasi in October 2017 was parallel with a digital development roadmap for 2017–2020 (Baskoro, 2021, p. 16). This movement was quickly responded to and supported in just a year; there were already 75 institutions partnering with the movement. The movement reached 125,000 people in 350 locations (Idris, 2022). It also received international recognition as a Champion at the World Summit on the Information Society (WSIS) Prizes in 2020 (International Telecommunication Union, 2020).

It is said that Siberkreasi, based on the 2017–2020 *roadmap*, is designed to accelerate digital development. Its activities include curriculum development, collaborative engagement, community empowerment, and cyber governance as a national-scale literacy effort. The MCI at that time also synergized this movement with projects to accelerate the development of smart cities in response to the industrial revolution 4.0, which was rapidly rolling in Indonesia (Baskoro, 2021, p. 6).

In 2018 UNESCO, with a comprehensive framework, defined digital literacy as an individual's ability to access, manage, understand, integrate, communicate, evaluate, and create information safely and appropriately through digital technologies for employment, decent jobs, and entrepreneurship. It includes various competencies: computer literacy, ICT literacy, information literacy, and media literacy (UNESCO Institute for Statistics, 2018).

And then the pandemic started. It opened up vast opportunities for all to carry out digital transformation on a large scale. However, before the pandemic, a collaborative mapping project by ten mass communication scholars from Yogyakarta, Bandung, and Jakarta started in January 2017. The mapping was only for universities and communities in their respective cities that carried out digital literacy activities (Astuti, 2022). The project managed to list 342 digital literacy activities from 2010 to 2017 in nine cities.

During the project, the collaboration transformed into a new Japelidi in April 2017. The network has 56 researchers from 26 universities in nine Indonesian cities (Yogyakarta, Salatiga, Semarang, Surakarta, Malang, Bandung, Banjarmasin, Bali, and Jakarta).

Japelidi mapping found that universities were the most active organizer of digital literacy activities (56.14 percent). In several universities, digital literacy was an important part of the curriculum. Among the various types of activities, lectures are the most popular. These are the most effective approaches to reaching a wider and more diverse public. Other activities include training, discussion, and setting up a task force to counter hoaxes. Schools (as they have NLM) are the most active partners in organizing digital literacy activities (32.07 percent), followed by the government and community.

In the middle of the pandemic, the government of Indonesia (GoI) continues accelerating digital infrastructure building and the digital economy, especially for micro, small, and

medium enterprises (MSMEs). Strengthening the digital government is a continuous effort, and preparing the public to be more digitally capable is necessary. The MCI starts a new slogan on digitally capable, not just digitally literate. With UNESCO's definition in mind, the MCI conducted two surveys measuring the digital literacy index.

The seven pillars and four sub-indexes structured on UNESCO mapping became the base of the first survey, starting from 18 to 31 August 2020. And the second survey started from 4 to 24 October 2021. The 2021 digital literacy index improved slightly to 3.49 from 2020 (3.46) but remained in the medium category. The index ranges from one to five, with one being 'very bad' and five 'very good.' The second survey was on four pillars digital skills, ethics, safety, and culture. The result of the second survey noted that there is still homework on digital safety.

Currently, Siberkreasi focuses on basic digital skills with the community as the target. The MIC has other programs on capacity-building, known as digital talent scholarships for technical employees. There is also a digital leadership academy for individuals with advanced digital skills (Deloitte et al., 2021, p. 7). Last year, the digital literacy program reached around 12 million people through 20,000 online literacy classes (Idris, 2022).

The Siberkreasi program also tries to address everyday school-level socialization. As digital literacy skills are very important in education, their effort should be a part of a joint or national movement. The four pillars of digital literacy launched by the MCI are very relevant to the direction of developing the learning paradigm that the MoE is carrying out. MoE has introduced digital security and skills within the ministerial level trickling down to schools (Sekretariat GTK, 2021). With pillars of digital literacy of the MCI that serve as guidelines for ministerial institutions, the MoE programs started to include digital ethics and culture.

The Gol continues accelerating, rebuilding, and improving digital infrastructure construction. By the end of 2022, Gol will try to provide 4G signals to 12,548 villages across the country. It is ten years ahead of the previous pledge's completion in 2032. Digital management has been further strengthened, and the general public is expected to be ready to acquire digital literacy. This Gol literacy program is the largest in the country compared to programs carried out by schools, universities, CSOs, or digital technology companies. In 2021, the Gol expressed confidence that the program would reach 50 million people by the end of the President's second term (2024).

The digital literacy stakeholders from business industries, the government, education sectors, activists, and policymakers from all governmental entities and levels need to be aware that there are many dimensions and variables regarding implementing the digital literacy framework. Stakeholders must comprehend their beneficiaries or the participants more deeply to increase the effect of digital literacy-related activities. The development of digital literacy for different groups of people, including parents and families, requires more energy since each group might require a different set of skills, abilities, or competencies. Different subject matter experts, such as technologists, instructional designers, and content experts, should join the team (Tinmaz et al., 2022, p. 13). The joint effort started with the government through its governmental institutions, followed by the public, including the family at home.

Digital Literacy at School

At the starting point, based on the Japelidi survey, schools are the most active partners in organizing digital literacy activities, followed by the government and community. Schools with their NLM have a clear target to have a high literacy culture. High culture would show the nation's ability to collaborate, think critically, be creative and be commu-

nicative in the face of global competition. As a large nation, Indonesia must develop a literacy culture as a prerequisite for 21st-century life skills through integrated education, starting from family and school to the community. While MCI targets communities in general, the MoE primarily targets schools, accompanied by programs for parents and communities to support reading habits and little on improving digital literacy.

Digital education is the main program related to digital literacy. In mid-September 2019, MoE launched the School Digitization Program to accelerate access to quality education through technology and interactive software package. It is a way to enrich education by integrating technology into traditional classrooms. The development of the program also faces structural challenges related to inequality in Internet access. Great efforts are needed to standardize and improve Internet access, especially to ensure that low- and middle-income groups living in rural and remote areas are not marginalized over time.

Given the importance of knowledge and skills in using technology in everyday life, digital literacy should be included in the national curriculum. Technology supports teaching and learning is a good resource for teachers. MoE distributed tablets to 1,753,000 students containing electronic books, study materials, and educational content for sixth, seventh, and tenth graders that can be accessed online and offline. The digitization program was conducted in 36,231 schools, with 37.3 thousand servers for schools, especially in rural and remote areas (Biro Komunikasi dan Layanan Masyarakat, 2019, p. 18).

With webinars and podcast series created by Siberkreasi, schools actively welcome cooperation with ministries other than MoE. School teachers' official sharing network noted that school digital literacy must be developed as an integrated learning mechanism in the curriculum or at least connected to the teaching and learning system (Iskandar, 2022). Students need to improve their skills, teachers need to increase their knowledge and creativity in the digital literacy teaching process, and school principals need to facilitate teachers or education personnel to develop a school's digital literacy culture.

The characteristics of digital literacy refer not only to operating skills and using various information technology and communication technology devices (hardware and software platforms) but also to reading and understanding the content of technological devices and the process of creating and writing. It is an essential requirement for their participation in the modern world. The modern and virtual world is increasingly filled with fake news, malicious language, radicalism, and even deceptive content. The negative content damaging the digital ecosystem can only be countered by raising awareness (Azzahra, 2022).

While MoE is actively digitizing education, there is still a serious challenge in improving the digital literacy of students and teachers. Commission X of the House mentioned that NLM had not provided maximum results during a parliamentary hearing with several ministries and agencies. Although literacy-related programs and their budget are spread across several ministries/agencies, reorganizing the budget is necessary through cross-ministerial collaboration so that programs and budgets are on target (Parlementaria, 2021). MPs also mentioned that although it is good, the literacy program in Indonesia is considered unable to achieve what is needed. Role models and leaders, including teachers and parents, can positively influence students in the literacy movement.

The House is committed to continuing to oversee the issue of increasing literacy (including digital literacy) with the support of the relevant ministries/agencies. On the previous hearing on 25 November 2020, Commission X encouraged relevant ministries/agencies, according to their duties, functions, and authorities, to collaborate, accelerate and improve the planning and implementation of programs related to increasing national literacy.

It is a desire for teachers to instill in the students the motivation to improve their learning and help them find ways to create or apply learning routines that demonstrate that they can take advantage of technology. Zimmerman and Schunk (2011) argue that promoting self-regulation in the early stage and using different strategies to improve their academic performance has relevance and impact on young learners learning, motivation, and development.

Cho and Shen (2013) mention that when self-regulation is used or applied in digital contexts and when the teacher is in charge of the accompaniment of the learners, this can help the students to achieve self-efficacy since it challenges students and motivates them to invest time and effort in accomplishing the objectives set. It is expected that young learner would take advantage of the learning process and take this to new learning scenarios in which technology provide different and new experiences for improving different skills. The responsible use of these tools will help students become digital literates and, at the same time, develop learning strategies that will guide them toward becoming self-regulated people.

A study by Purnama et al. (2021) determined that digital literacy positively affects online risk, and self-regulation positively influences online risk in children. The findings pointed out that some children had low self-regulation, resulting in a high online risk. The study suggested that children, parents, and teachers should provide positive support and direction to children using the Internet, one of which is the parenting mediation strategy. Self-regulation makes a person able to judge, decide, or evaluate actions. This ability is formed since childhood from parental upbringing and the influence of the surrounding environment, including schools.

The Role of Parents

While teachers at schools may be the first ones to introduce self-regulation, it is crucial to communicate the importance of digital skills and their basics early in the family. Although there is no intervention from the school to the family, parents play an important role in increasing resilience in tackling the development of information technology. The negative potential of gadgets for children can be traced to the decreasing minimum age for someone to start using gadgets. The more children gain access, the more they may be exposed to potential harm—harmful content, contact, conduct, cyberbullying, sexual harassment, commercial exploitation, or hate speech.

Modern parents see gadgets as a way to distract their children. Statistics from Japelidi stated that teens or students topped the participant's list at 29.55 percent (Astuti, 2022). Young people are considered the most vulnerable to hoaxes. On the other hand, they are seen as the largest group of potential digital literacy agents. The gap between the rapid development of technology and the level of preparedness in society to respond and wisely utilize it has become the root of the problem.

Only 12.23 percent of activities in digital literacy by Siberkreasi target parents as active participants, even though children's digital activities mostly happen in the family setting. The latest survey by APJII noted parents' difficulty in participating in digital literacy. Out of 321 respondents (23.68 percent were parents) from Java, almost half (46.05 percent) could not accompany their children to study during the pandemic because they had to work (Asosiasi Penyelenggara Jasa Internet Indonesia, 2022, p. 80). It is one of the few reasons the parents cannot be actively involved. Other reasons were cost, lack of understanding, and lack of supporting gadgets.

Livingstone and Byrne (2017) report that students in high-income countries suggest a break from restricted forms of parental mediation, such as technology bans and warnings

to children in the event of problems. In low- and middle-income countries, parents seem to prefer restrictive mediation. This is because, in some cultures, parenting styles are more authoritarian (especially for daughters). Worried parents feel that restricting access without support resources is the only option to protect their children. This is also because the broader public debate has not yet embraced the ideas of children as active citizens and, therefore, as digital citizens (Livingstone & Byrne, 2017).

However, parents are becoming more digital natives with the increasing familiarity and embedding of using the Internet in their daily lives. Parents are increasingly using supportive forms of mediation, sharing some online experiences with children and guiding them on the use of privacy settings, counseling services, and a critical assessment of online content and behavior. Parents' growing experience and ability to work with digital media influence this change. It results from several years of stakeholder efforts to raise parental awareness and involvement.

APJII 2022 survey supports that the number of homemakers using the Internet has almost doubled. They often want to learn about the Internet and what it can offer them and their children. As Indonesia is a lower-middle-income country based on the World Bank classification (Hamadeh et al., 2022), it is important for stakeholders, from governments and industries to schools and communities, to invest more in supporting parents in these efforts to enable children to learn and thrive in the digital age.

Apart from the statistics collated by UN institutions, most research on digital literacy for younger ages is mainly drawn from the world's wealthier countries. The research is also often not disaggregated by the economic and cultural factors that differentiate or discriminate within the age groups. Livingstone et al. (2011) reported findings that have implications for multiple stakeholders, especially parents. Indonesia could learn from this, bearing in mind cultural differences.

Awareness-raising

Based on Livingstone et al. (2022) research in 2012, awareness-raising should alert parents to the nature of the online risks their children may encounter. Since parents would prefer to get information on internet safety from their child's school, greater efforts should be undertaken by the education sector. Although limited to several sessions, Siberkreasi and MoE have worked on this and have special sessions for parents through digital society's webinars and podcast series.

Raising awareness requires a long-term vision, adequate infrastructure, and a structured approach within the education sector, ideally from the earliest years of education and applied across the system to develop curricula, technical resources, and teacher training (Livingstone et al., 2022, p. 141). Children need competence in operating many devices and accessing and navigating different services in the digital age. They must also critically understand the digital world in which they are increasingly immersed and with which they must engage widely and deeply as citizens now and in the future.

Parents and children use relatively common industry tools (such as online safety information, filters, 'report abuse' buttons, etc.). Moreover, the use of the Internet has become more personalized. Therefore, the industry should also develop greater public awareness, trust, and ease of use. The industry is more responsible for managing children's risks and ensuring they have the tools to prevent or cope with harm. It also burdens children more with the responsibility for their safety; thus, Internet safety messaging should seek to build children's confidence, resilience, and digital citizenship skills.

Siberkreasi, in cooperation with Microsoft, has held several sessions on training for the public, including for teachers and professionals (Direktorat Sekolah Dasar, 2021). Parents

have yet to be fully involved in these sessions. Therefore, industry efforts to support positive content and internet safety should be improved and include parents. Technical tools to support blocking, reporting, and filtering should also be a cornerstone of the industry's child protection policy. They need to increase awareness of such mechanisms and improve their accessibility as well as usability to aid better take up by parents and children. Children should also be encouraged to assume responsibility for their safety as much as possible, focusing on empowerment, responsible behavior, and digital citizenship.

Since many children do not report encountering the risks, with even fewer having been bothered or upset by their online experiences, future safety policy should target resources and guidance where they are particularly needed—especially for younger children who go online. A new policy focus is vital for awareness-raising and support measures designed to suit the needs of much younger internet users, especially in primary schools.

Digital skills training needs continued emphasis and updating regarding training, safety features, and application operation to ensure that all children reach a minimum basic standard and prevent digitally isolated and unskilled children. This should also seek to broaden the range of activities undertaken by children since many make little use of creative opportunities online. Moreover, since less than half of 9–16-year-olds are very satisfied with the levels of online provision available to them, even fewer among younger children, there is a responsibility on all policy actors to ensure the greater availability of age-appropriate positive content for children, especially in small language communities (Livingston et al., 2011) that commonly known in Indonesia as ethnicities.

Dialogue and Understanding

Other than alerting parents, Livingstone et al. (2011) encourage dialogue and greater understanding between parents and children concerning children's online activities. The Covid-19 pandemic has led to extraordinary changes in family digital literacy, forcing conventional classes to shift rapidly to online instruction. The experience demonstrated the critical importance of family literacy (Kaiper-Marquez et al., 2020, p. 706). Understanding the real constraints families and children face in the digital world is the first step toward finding effective strategies that parents and children can use to maximize opportunities and minimize risks (Livingstone & Byrne, 2017).

Children still trust their parents' ability to provide guidance and support. From a multinational research collaboration of the UNICEF, LSE, and the EU Kids Online in seven countries (Argentina, Chile, Bulgaria, Montenegro, Serbia, South Africa, and the Philippines), there was a question on whom they turn to for support if they experience something negative online. Most children from the seven countries would turn to friends first, parents second, and rarely to teachers or other professionals. This is positive news for parents, for there are opportunities to gain their children's trust (Livingstone & Byrne, 2017).

Notably, children in European countries are more likely to tell a parent if they experience a problem online than in other parts of the world. Perhaps this reflects a more encouraging emphasis on enabling rather than restriction among European parents. Certainly, it suggests the need for greater investment in the support and guidance of parents globally. Children's parents' lack of trust in teachers and professionals is worrying. The lack of trust makes parents wonder if they are even available to children to the ideal degree of being there and being professionals who can provide the right advice for their children.

If parents' primary method of protecting children is through restricting access, this can be effective in keeping children safe, but it carries costs regarding children's online opportunities. The restrictive approach can potentially undermine children's opportunity to build

digital skills and resilience in ways that will help them face and manage risky experiences in the future. So what advice can we give parents? What roles and skills do they need in the digital world? Do parenting principles and practices we used before the technological boom still apply?

In 2007 the World Health Organization (WHO) developed a framework that examines key dimensions of parenting and parental roles that positively affect adolescent well-being (World Health Organization, 2007, p. 8). The five dimensions in the digital era are love connection, limiting behavior, respecting individuality, modeling appropriate behavior, and providing guidance. Love connection in understanding the world would build positive, stable, and emotional bonds between parent and child. Behavior control limits, including supervision and guidance of children within a trusting relationship. Respect for the child's individuality on different ideas or opinions, especially as an adolescent. Parents model appropriate behavior since children identify with and emulate their parents. Parents and the wider community should provide provision and protection to the children.

Fifteen years on, this framework with five dimensions translates well in the digital era. Take modeling of appropriate behavior, for example. Ideally, parents would be confident in drawing on their available personal and cultural resources and, to some extent, the principles of positive parenting when facing the new challenges linked to children's internet use. Ideally, too, even if tempted to prevent or restrict children's digital activities for fear of the harms that may result, they would be mindful that some activities may be important to their children's present and future opportunities—to learn, gain information, work, and engage in their community.

A study by Tinmaz et al. (2022) found that during Covid-19, converting classical learning to distance learning using technology was not without difficulties, including parents' digital challenges. Such challenges must be further examined to ensure effective and equitable programming for all families. However, some benefits include improved parents' digital skills, greater participation between parents and children at home, and continued family learning that might otherwise have ceased due to the Covid-19 quarantine.

UNESCO webinar on family learning noted that the Covid-19 pandemic has led to greater acknowledgment, in policy and practice, of parents' and families' pivotal roles in children learning and parents' and adults' own learning needs. Emphasis was previously placed on formal education, but now we are more clearly seeing the important role of informal, intergenerational, and family learning (UNESCO Institute for Lifelong Learning, 2020).

Conclusion

As Southeast Asia's largest digital economy market, Indonesia's capacity and readiness to adopt and explore digital technologies are still very low. This problem is worsened by low digital literacy. Indonesia has had a National Literacy Movement (NLM) under the Ministry of Education (MoE) coordination since 2016 and the National Digital Literacy Movement (NDLM) *Siberkreasi* a year after that under the Ministry of Communications and Informatics (MCI). Each movement has its reasoning background.

The pandemic opened up vast opportunities for all to carry out digital transformation on a large scale. Mapping found that schools in Indonesia are the most active partners in organizing digital literacy activities, followed by the government and community. While MCI targets communities in general, the MoE primarily targets schools, accompanied by programs for parents and communities to support mostly reading habits.

However, the House evaluated that MoE's NLM had not provided maximum results. The literacy program in Indonesia is considered unable to achieve what is needed. More-

over, this is the right time for MCI's NDLM Siberkreasi to play his role. While MoE concentrates on digital literacy at schools, MCI should start to empower parents to promote digital literacy from home. If the parent does not put down a phone or a tablet, will the child mimic this behavior? If a parent uses restrictive mediation and censorship, how does this lead to respect for individuality? So, a balance must be sought.

Learning from studies and surveys, there should be a joint effort to promote digital literacy from home for basic self-regulation. Since the pandemic, many countries have used digital technology online platforms to ensure ongoing learning. At school, teachers should introduce self-regulation to help the students become digital literates and, at the same time, develop learning strategies that will guide them toward becoming self-regulated people.

Parents should be invited as active participants as they are becoming more digital natives with the increasing familiarity and embedding of using the Internet in their daily lives. The priority for awareness-raising should be on alerting parents to the nature of the online risks their children may encounter. At the same time, dialogue or parent mediation should provide guidance and support. Not only teachers, parents or the government should concern about this effort. With a long-term vision, the industry should also be fully involved.

References

- Adityar. (2017). *Pengaruh literasi digital terhadap perilaku internet berisiko di kalangan siswa SMA dan MA di kota Makassar* [Thesis]. Universitas Hasanuddin Makassar.
- Alaleeli, S., & Alnajjar, A. (2020). The Arab digital generation's engagement with technology: The case of high school students in the UAE. *Journal of Technology and Science Education*, 10(1), 159–178. <https://doi.org/10.3926/jotse.756>
- Asosiasi Penyelenggara Jasa Internet Indonesia. (2020, November). *Laporan survei internet APJII 2019–2020 (Q2)* [Report]. APJII.
- Asosiasi Penyelenggara Jasa Internet Indonesia. (2022, June). *Profil internet Indonesia 2022* [Report]. APJII.
- Astuti, S. I. (2022, January 17). *Researchers find Indonesia needs more digital literacy education*. The Conversation. Retrieved November 6, 2022, from <https://theconversation.com/researchers-find-indonesia-needs-more-digital-literacy-education-84570>
- Avvisati, F., Echazarra, A., Givord, P., & Schwabe, M. (2019). *Education GPS - Indonesia - Student performance (PISA 2018)*. Education GPS. Retrieved November 8, 2022, from <https://gpseducation.oecd.org/CountryProfile?primaryCountry=IDN&treshold=10&topic=PI>
- Ayari, N. (2022, September 8). *Young Africans still lag behind in digital literacy*. LEED Initiative. Retrieved December 1, 2022, from <https://www.leed-initiative.org/blog/young-africans-still-lag-behind-digital-literacy>
- Azzahra, N. F. (2022, July 12). Literasi Digital sebagai pelindung dari ancaman nyata dunia maya. *Kompas.id*. <https://www.kompas.id/baca/opini/2022/07/11/literasi-digital-sebagai-pelindung-dari-ancaman-nyata-dunia-maya>
- Baskoro, H. (2021, March 27). "Quo vadis" gerakan literasi digital. *Kompas*, 6.
- Biro Komunikasi dan Layanan Masyarakat. (2019). Digitalisasi sekolah akan mampu tingkatkan kualitas pembelajaran siswa. *Jendela Pendidikan dan Kebudayaan*, XXXIX(October), 18.
- Burris, J. (2019). Syncing with families: Using technology in early childhood programs. *American Journal of Education and Learning*, 4(2), 302–313. <https://doi: 10.20448/804.4.2.302.313>

- CCSU News Release. (2016, March 7). *World's most literate nations ranked*. webCapp. Retrieved November 8, 2022, from <https://webcapp.ccsu.edu/?news=1767&data>
- Cho, M.-H., & Shen, D. (2013). Self-regulation in online learning. *Distance Education*, 34(3), 290–301. <https://doi.org/10.1080/01587919.2013.835770>
- Deloitte, Siberkreasi, & Kementerian Komunikasi dan Informatika. (2021). *Roadmap literasi digital 2020–2024*. Kementerian Komunikasi dan Informatika.
- Desi, Y. P. (2019). Gerakan literasi digital berbasis sekolah: Implementasi dan strategi. *Jurnal Ilmu Komunikasi*, 17(1), 51–59. <https://doi.org/10.31315/jik.v17i1.3510>
- Dias, P., Brito, R., Ribbens, W., Daniela, L., Rubene, Z., Dreier, M., Gemo, M., Gioia, R. D., & Chaudron, S. (2016, November 7). The role of parents in the engagement of young children with digital technologies: Exploring tensions between rights of access and protection, from 'gatekeepers' to 'scaffolders'. *Global Studies of Childhood*, 6(4), 414–427. <https://doi.org/10.1177/2043610616676024>
- Dihni, V. A. (2022, July 13). *Indeks literasi digital Indonesia membaik pada 2021*. Databoks. Retrieved December 1, 2022, from <https://databoks.katadata.co.id/datapublish/2022/07/13/indeks-literasi-digital-indonesia-membaik-pada-2021>
- Direktorat Sekolah Dasar. (2021, February 21). *Literasi digital bagi tenaga pendidik dan anak didik di era digital*. Direktorat Sekolah Dasar. Retrieved November 30, 2022, from <https://ditpsd.kemdikbud.go.id/artikel/detail/literasi-digital-bagi-tenaga-pendidik-dan-anak-didik-di-era-digital>
- Eshet, Y. (2004, January). Digital literacy: A conceptual framework for survival skills in the digital era. *Jurnal of Educational Multimedia and Hypermedia*, 13(1), 93–106. <https://www.learntechlib.org/primary/p/4793/>
- Eshet-Alkalai, Y. (2012). Thinking in digital era: A revised model for digital literacy. *Issues in Informing Science and Information Technology*, 9, 267–276. <https://doi.org/10.28945/1621>
- Google, Temasek Holdings Pte Ltd, & Bain & Company. (2021, August 19). *e-conomy SEA 2021*. Google Services. Retrieved November 30, 2022, from https://services.google.com/fh/files/misc/e_conomy_sea_2021_report.pdf
- Hamadeh, N., Rompaey, C. v., Metreau, E., & Eapen, S. G. (2022, July 1). *New World Bank country classifications by income level: 2022-2023*. World Bank Blogs. Retrieved November 30, 2022, from <https://blogs.worldbank.org/opendata/new-world-bank-country-classifications-income-level-2022-2023>
- He, X., & Wray, D. (2017). Digital literacies in a Chinese secondary school. In A. Marcus-Quinn & T. Hourigan (Eds.), *Handbook on digital learning for k-12 schools* (pp. 233–249). Springer International Publishing. https://doi.org/10.1007/978-3-319-33808-8_14
- Idris, I. K. (2022, March 8). Penghentian hoaks dan apa manfaat literasi digital pemerintah Jokowi. *Koran TEMPO*. <https://koran.tempo.co/read/opini/472243/penghentian-hoaks-dan-apa-manfaat-literasi-digital-pemerintah-jokowi>
- International Institute for Management and Development. (2022). *IMD world digital competitiveness ranking 2022*. IMD.
- International Telecommunication Union. (2020, August 2). *World summit on the information society prizes 2020*. ITU. Retrieved November 30, 2022, from <https://www.itu.int/net4/wsis/stocktaking/Prizes/2022/Winners?jts=6MMAQW&idx=10>
- Iskandar, L. L. (2022, March 10). *Pengelolaan program yang berdampak pada murid program literasi digital di SMAN 1 Talaga*. Ayo Guru Berbagi. Retrieved November 30, 2022, from <https://ayoguruberbagi.kemdikbud.go.id/cerita/pengelolaan-program-yang-berdampak-pada-murid-program-literasi-digital-di-sman-1-talaga/>

- Kaiper-Marquez, A., Wolfe, E., Clymer, C., Lee, J., McLean, E. G., Prins, E., & Stickel, T. (2020, October 14). On the fly: Adapting quickly to emergency remote instruction in a family literacy programme. *International Review of Education*, 66, 691–713. <https://doi.org/10.1007/s11159-020-09861-y>
- Kementerian Pendidikan dan Kebudayaan. (2017). *Materi pendukung literasi digital. Gerakan literasi nasional*. Kementerian Pendidikan dan Kebudayaan.
- Livingston, S., Haddon, L., Görzig, A., & Ólafsson, K. (2011). *Risks and safety on the internet: The perspective of European children: Full findings and policy implications from the EU kids online survey*. LSE Research Online. Retrieved November 30, 2022, from <https://eprints.lse.ac.uk/33731/1/Risks%20and%20safety%20on%20the%20internet%28Isero%29.pdf>
- Livingstone, S., & Byrne, J. (2017, December 11). *Challenges of parental responsibility in the digital age: A global perspective*. UNICEF Innocenti. Retrieved November 30, 2022, from <https://www.unicef-irc.org/evidence-for-action/challenges-of-parental-responsibility-in-the-digital-age-a-global-perspective/>
- Livingstone, S., Helsper, E., & Rahali, M. (2022). The digital lives of children and youth. In *Global connectivity report 2022* (pp. 138–150). ITU.
- Loewus, L., McGarvey, M., Herold, B., & Calkins, L. (2016, November 8). *What is digital literacy?* Education Week. Retrieved December 1, 2022, from <https://www.edweek.org/teaching-learning/what-is-digital-literacy/2016/11>
- Nascimbeni, F., & Vosloo, S. (2019, August). *Digital literacy for children: Exploring definitions and frameworks* [Scoping Paper]. UNICEF Office of Global Insight and Policy. <https://www.unicef.org/globalinsight/media/1271/file/%20UNICEF-Global-Insight-digital-literacy-scoping-paper-2020.pdf>
- Parlementaria. (2021, February 2). Pelaksanaan program literasi belum capai hasil maksimal. *Parlementaria*. <https://www.dpr.go.id/berita/detail/id/31595/t/Pelaksanaan+Program+Literasi+Belum+Capai+Hasil+Maksimal>
- Purnama, S., Ulfah, M., Machali, I., Wibowo, A., & Narmaditya, B. S. (2021, June). Does digital literacy influence students' online risk? Evidence from Covid-19. *Heliyon*, 7(6). <https://doi.org/10.1016/j.heliyon.2021.e07406>
- Rizkinaswara, L. (2020, April 20). *Hingga 18 April ditemukan 554 hoaks COVID-19*. Ditjen Aptika. Retrieved November 6, 2022, from <https://aptika.kominfo.go.id/2020/04/hingga-18-april-ditemukan-554-hoaks-covid-19/>
- Sekretariat GTK. (2021, May 21). *Penggunaan teknologi tepat sasaran menjadi kunci pemerataan dan peningkatan kualitas pendidikan*. GTK KEMENDIKBUDRISTEK 2022. Retrieved December 1, 2022, from <https://gtk.kemdikbud.go.id/index.php/read-news/penggunaan-teknologi-tepat-sasaran-menjadi-kunci-pemerataan-dan-peningkatan-kualitas-pendidikan>
- Sukri, M. (2021). *Literasi digital sebagai media pembelajaran dalam perspektif pendidikan Islam* [Thesis]. Universitas Islam Negeri Raden Intan Lampung.
- Sukron, A. (2021). *Hubungan literasi digital orang tua dengan kebiasaan belajar anak* [Thesis]. Universitas Widya Dharma Klaten.
- Tinmaz, H., Lee, Y.-T., Fanea-Ivanovici, M., & Baber, H. (2022). A systematic review on digital literacy. *Smart Learning Environments*, 9(21). <https://doi.org/10.1186/s40561-022-00204-y>
- TRUST Positif. (n.d.). *Internet sehat dan aman*. TrustPositif. Retrieved November 6, 2022, from <https://trustpositif.kominfo.go.id/Statistik>
- UNESCO Institute for Lifelong Learning. (2020, April 16). *UNESCO learning cities' responses to COVID-19*. UNESCO Institute for Lifelong Learning. Retrieved December 1, 2022, from <https://uil.unesco.org/lifelong-learning/learning-cities/unesco-learning-cities-responses-covid-19-outcomes-webinar-8-april>

- UNESCO Institute for Statistics. (2018). *A global framework of reference on digital literacy skills for indicator*. UNESCO Institute for Statistics. Retrieved November 30, 2022, from <http://uis.unesco.org/sites/default/files/documents/ip51-global-framework-reference-digital-literacy-skills-2018-en.pdf>
- United Nations Development Programme. (2020). *Specific country data*. Human Development Reports. Retrieved November 30, 2022, from <https://hdr.undp.org/data-center/specific-country-data#/countries/IDN>
- White, D., & Lanclos, D. (2015). *Towards a national digital skills framework for Irish higher education*. National Forum for the Enhancement of Teaching and Learning in Higher Education. Retrieved November 30, 2022, from <https://www.teachingandlearning.ie/wp-content/uploads/NF-2016-Towards-a-National-Digital-Skills-Framework-for-Irish-Higher-Education.pdf>
- World Health Organization. (2007). *Helping parents in developing countries improve adolescents' health*. World Health Organization.
- Zimmerman, B. J., & Schunk, D. H. (Eds.). (2011). *Handbook of self-regulation of learning and performance*. Taylor & Francis. <https://doi.org/10.4324/9780203839010>